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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte: DAVID K. PLATNER

Appeal 2008-4544
Application 10/056,945
Technology Center 3600

Decided:¹ February 17, 2009

Before: LINDA E. HORNER, JOHN C. KERINS and,
STEFAN STAICOVICI *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic delivery).

STATEMENT OF THE CASE

David Platner (Appellant) seeks our review under 35 U.S.C. § 134 of the final rejection of claims 1, 4, and 20-23. Claims 2, 3, and 6 have been withdrawn, and claims 5, 7-19, and 24 have been cancelled. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We AFFIRM-IN-PART.

THE INVENTION

Appellant's claimed invention is a method of forming a complete axle from a singular tubular member. Spec. 1, para. 2. Claim 1, reproduced below, is representative of the subject matter on appeal.

1. A method of forming an axle assembly comprising the steps of:
 - a) providing a cylindrical hollow member having an end portion;
 - b) forming the end portion to provide a first generally circular end in cross-section,
 - c) forming a section of the cylindrical hollow member into a polygonal cross-section section; and
 - d) welding a preformed kingpin boss to the generally circular end.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Moses	US 6,122,948	Sep. 26, 2000
Dickson, Jr. ("Dickson")	US 6,247,346 B1	Jun. 19, 2001

The Appellant seeks our review of the following rejections:

1. The Examiner rejected claims 1, 21, and 23 under 35 U.S.C. § 102(a) as anticipated by Moses.
2. The Examiner rejected claim 22 under 35 U.S.C. § 103(a) as being unpatentable in view of Moses.²
3. The Examiner rejected claims 4 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Moses in view of Dickson.

ISSUES

The Examiner rejected claims 1, 21, and 23 under 35 U.S.C. § 102(a) as anticipated by Moses. Ans. 3-4. Appellant contends Moses does not disclose a hollow member having a polygonal cross-section section, and that hydroforming cannot operate on materials with a thickness of greater than 1/8 inch. App. Br. 5-6.

The first issue before us is:

Has Appellant shown that Moses does not disclose each element of the claim because it does not disclose a hollow member with a polygonal

² While the heading in the rejection says it is under 35 U.S.C. § 102(a), the body of the rejection makes it clear it is under 35 U.S.C. § 103(a) (Ans. 4), and the Appellant responded as if it was a 35 U.S.C. § 103(a) rejection (App. Br. 6-7).

cross-section section or because the hydroforming process of Moses cannot operate on materials with a thickness of greater than 1/8 inch?

The Examiner rejected claim 22 under 35 U.S.C. § 103(a) as unpatentable over Moses. Ans. 4-5. Appellant contends that Moses does not disclose a rectangle with a height to width ratio of 1.2, and that the hydroforming process of Moses cannot produce a substantially rectangular cross-section section in the hollow member. App. Br. 7.

The second issue before us is:

Has Appellant shown the Examiner erred in the rejection of claim 22 because either Moses does not disclose a rectangle with a height to width ratio of 1.2, or because the hydroforming process of Moses cannot produce a substantially rectangular cross-section section in the hollow member?

The Examiner rejected claim 4 under 35 U.S.C. § 103(a) as unpatentable over Moses and Dickson. Ans. 5-6. Appellant contends there is no reason to modify Moses in view of Dickson because the hydroforming process of Moses could create the frustoconical shape, so that there is no motivation to use the swaging of Dickson to create the frustoconical shape. App. Br. 7-8.

The third issue before us is:

Has Appellant shown the Examiner erred in the rejection of claim 4 because there is no reason to modify Moses in view of Dickson because the hydroforming process of Moses could create the frustoconical shape, so that there is no motivation to use the swaging of Dickson to create the frustoconical shape?

The Examiner rejected claim 20 under 35 U.S.C. § 103(a) as unpatentable over Moses and Dickson. Ans. 5-6. Appellant contends that there is no reason to combine Moses with Dickson because neither Moses nor Dickson discloses providing a preformed hollow member with multi-wall thickness. App. Br. 7-9.

The fourth issue before us is:

Has Appellant shown the Examiner erred in the rejection of claim 20 because there is no reason to combine Moses with Dickson because neither Moses nor Dickson discloses providing a preformed hollow member with multi-wall thickness?

FINDINGS OF FACT

We find that the following enumerated facts are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. Appellant discloses a process that is initiated with a hollow member that may be hydroformed into cylindrical tubular member 12 (step 20) or polygonal member 18 (step 30).

Preferably, the hollow member 12 is preferably [sic] a cylindrical tubular member 12 as indicated at step 20, but may also be a polygonal member as indicated in step 30. It is understood that hydroforming, stamping, rolling or other method may be used to form the hollow member 12.

Spec. 3, para. 11; *see also* Fig. 1

2. In one embodiment (path 10) frustoconical (or generally circular) end 42 may be formed by swaging after tubular member 12 is formed into polygonal member 18, and in an alternate embodiment (path 10A) frustoconical end 42 is formed prior to tubular member 12 being formed into polygonal member 18 (step 30A). Spec. 4, para. 15; Spec. 4, para. 19, respectively.
3. Unless specified otherwise in the claim, the Appellant's process may be performed in any sequence. Spec. 5, paras. 21-22.
4. Appellant's Specification does not provide a lexicographic definition for "polygonal," or for "rectangular." Spec., *passim*.
5. The ordinary and customary meaning of the term "polygonal" is "having many sides." *Webster's Third New International Dictionary, Unabridged* (1961).
6. The ordinary and customary meaning of the term "rectangle" is "a parallelogram all of whose angles are right angles." *Webster's Third New International Dictionary, Unabridged* (1961).
7. Moses discloses a method of manufacturing rigid axle beams such as for use in a vehicle suspension system. Moses, col. 1, ll. 10-14.
8. Moses discloses an embodiment where the method includes providing a cylindrical (tubular) hollow member, such as hollow front axle beam 60 with

end portion 61 that has a generally circular cross-section. Moses, col. 6, ll. 34-43; Fig. 10; Fig. 11; *see also* col. 2, ll. 21-22 (“initially a tubular blank is provided”).

9. Moses discloses a section of the hollow member may be hydroformed into “any desired cross sectional shape” and discloses embodiments with cross-sections that are: circular, triangular, I-shaped, and oval. Moses, col. 2, ll. 32-34 (any shape, including circular, triangular, I-shaped, and oval); col. 5, ll. 9-61 (hydroforming); col. 4, ll. 56-59 (circular beam 40); col. 6, ll. 12-15 (triangular beam 50); col. 6, ll. 38-41 (I-shaped beam 60); col. 6, ll. 64-67 (oval beam 70).
10. Moses discloses conventional bending of the hollow front axle beam to attain the general desired shape prior to the hydroforming process. Moses, col. 5, l. 62 to col. 6, l. 5.
11. Dickson discloses a method of forming vehicle drive shafts. Dickson, col. 1, ll. 11-14.
12. Dickson discloses a process that includes providing a hollow elongate tube where the tube has at least a section with a wall thickness different from the remaining section (multi-wall thickness) that is created by drawing. Dickson, claim 10

(depending from claim 1); col. 6, ll. 33-64 (in particular note US 4,788,841, to Calhoun, Dec. 6, 1988, Fig. 2; col. 1, ll. 6-10, incorporated by reference).

PRINCIPLES OF LAW

Anticipation Burden

After the PTO establishes a prima facie case of anticipation the burden shifts to the appellant to prove that the subject matter shown to be in the prior art does not possess the characteristics of the claimed invention. *See In re King*, 801 F.2d 1324, 1327 (Fed. Cir. 1986); *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985).

§103 Burden

In rejecting claims under 35 U.S.C. § 103(a), the examiner bears the initial burden of establishing a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). *See also In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to appellant. *Id.* at 1445. *See also Piasecki*, 745 F.2d at 1472. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See Oetiker*, 977 F.2d at 1445; *Piasecki*, 745 F.2d at 1472.

ANALYSIS

Rejection of claims 1, 21, and 23 under 35 U.S.C. § 102(a) as anticipated by Moses.

Appellant argues claims 1, 21, and 23 as a group. App. Br. 5-6. As such, we select claim 1 as the representative claim, and claims 21 and 23 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii) (2008).

First, Appellant argues Moses does not anticipate the claim because Moses fails to disclose a hollow member with a polygonal cross-section. App. Br. 5-6. More specifically, Appellant contends the hydroforming processes, like that used by Moses, can only produce “relatively soft-edged cross-sections which may not be properly interpreted as a polygonal cross-section.” *Id.* Our analysis begins with the claim.

The step at issue is step c) of claim 1: “forming a section of the cylindrical hollow member into a polygonal cross-section section.” “It is the [Appellant’s] burden to precisely define the invention, not the PTO’s.” *In re Morris*, 127 F.3d 1048, 1056 (Fed. Cir. 1997). Here the claim does not contain further clarification of the limitation “polygonal cross-section,” nor add the limitation that the polygon may not have soft-edges. In addition, the Specification does not provide further clarification, nor provide a definition (Fact 4). Given this, we turn to the ordinary meaning of the term. “Polygonal” means “having many sides” (Fact 5). We give the claim its broadest reasonable interpretation in light of that definition. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004); *In re Prater*, 415 F.2d 1393, 1404-05 (CCPA 1969). As such, we adopt the ordinary meaning of the term “polygonal” for our interpretation of the claimed “polygonal cross-section,” and we decline to construe narrowly the term to require hard

or sharp edges. The proper focus then is whether Moses discloses what is claimed, namely, forming a section of the cylindrical hollow member into a cross-section that has many sides.

Moses discloses the hollow member may be formed into “any desired cross sectional shape,” and discloses an embodiment with a triangular cross section (Facts 7-9). Further, Appellant’s own Specification states the hollow member may hydroformed to have a section with a polygonal cross-section (Fact 1), a direct contradiction of Appellant’s argument here. While we considered Appellant’s argument that hydroforming can only produce soft non-polygonal shapes, Appellant’s arguments do not take the place of evidence. *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974). We conclude, by a preponderance of the evidence, that the hydroforming process of Moses can and does produce a hollow member with a section that has a polygonal cross-section that meets the requirements of claim 1.

Next, Appellant maintains that hydroforming is “limited to relatively thin wall materials such as that of 1/8 inch or less.” App. Br. 6. Even if true, this argument is unconvincing. Appellant’s claim is not limited to materials with a wall thickness of greater than 1/8 inch because such limitation is not in the claim. If Moses discloses a process that meets the claim, even if the material used in Moses has a thickness less than 1/8 inch, each element of the claim is taught, and Moses still anticipates Appellant’s claim.

Appellant has failed to demonstrate the Examiner erred in the rejection of claim 1. The rejection of claims 21 and 23 likewise will be sustained.

Rejection of claim 22 under 35 U.S.C. § 103(a) as being unpatentable in view of Moses.

Claim 22 depends from claim 1, and adds the limitation to step c) that the polygonal cross section must be substantially rectangular with a height-to-width ratio of approximately 1.2.

First, Appellant comments that Moses does not disclose such a ratio. App. Br. 7. The Examiner conceded as much in the rejection, which was based on the reasoning that it would have been obvious for a person of ordinary skill in the art to modify Moses's method to include the claimed ratio. Ans. 4.

Next, Appellant argues that the process disclosed in the Moses patent cannot create a cross-section with a height-to-width ratio of 1.2 because the hydroforming process can only produce "relatively soft non-polygonal (defined by a height to width) shapes" that are not "conducive to such a ratio definition." App. Br. 7. Our analysis of this contention begins with the claim.

The step at issue is step a) of claim 22 that requires: "forming the polygonal cross-section section into a substantially rectangular cross-section section." While the claim specifies that the polygonal cross-section must be "substantially rectangular," the claim does not include the limitation that the polygon may not have soft-edges. In addition, the Specification does not provide a definition for "rectangular" (Fact 4). Given this, we turn to the common meaning of the word "rectangular," which is "a parallelogram all of whose angles are right angles" (Fact 6). Based on this common meaning, a "substantially rectangular" cross section is a shape that is generally like a parallelogram with all right angles. The proper focus then is whether it

would have been obvious in view of the disclosure in Moses to hydroform a cross-section of the cylindrical hollow member that is generally a parallelogram with all right angles.

Quite similar to the argument used against claim 1, analyzed *supra*, Appellant's argument that hydroforming can only produce non-polygonal cross-sections is unconvincing. Moses discloses hydroforming can produce any desired shape, to include examples of circular, triangular, I-shaped, and oval cross-sections (Fact 9). Further, Appellant's own Specification describes the claimed process as beginning with a hollow member that has a rectangular shape that may be created by hydroforming (Fact 1). While we considered Appellant's argument that hydroforming can only produce soft non-polygonal shapes, Appellant's arguments do not take the place of evidence. *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974). We conclude Appellant's contention that hydroforming cannot produce a substantially rectangular cross-section as required by claim 22 is incorrect.

Appellant has failed to demonstrate the Examiner erred in the rejection of claim 22.

Rejection of claims 4 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Moses in view of Dickson.

Claim 4

Claim 4 modifies claim 1 by adding a step to swage the polygonal cross-section into a frustoconical shape after step (c) ("forming a section of the cylindrical hollow member into a polygonal cross-section section").

The Examiner found the swaging process of Dickson could be used to form the frustoconical shape after the hydroforming process of Moses. The reason to combine put forth by the Examiner is that "swaging is a

notoriously old and well known technique used throughout the art of metal working/forming for shaping a tubular member into a desirable shape and/or form.” Ans. 5, 8.

Appellant contends there is no reason to modify Moses in view of Dickson because the hydroforming process of Moses could create the frustoconical shape, so that there is not motivation to use the swaging of Dickson. App. Br. 8.

Assuming, *arguendo*, that swaging is a notoriously old and well known technique in metalworking, that makes it an available technique, but this is not a sufficient reason to use the swaging technique in the process of Moses. Given the absence of a sufficient reason to combine, Appellant has demonstrated error in the Examiner’s rejection of claim 4.

Claim 20

Claim 20 modifies the method of claim 1 by adding that step a) further comprises providing the cylindrical hollow member with a preformed multi-wall thickness section.

Appellant asserts that the hydroforming process of Moses cannot create multi-wall thickness, that hydroforming process is inapplicable to the multi-wall thickness materials, and that this is particularly the case with materials greater than 1/8 inch in wall thickness. App. Br. 8-9. Appellant further contends that the hydroforming process of Moses must be performed first, because performing “machining, drawing, or other operations” of Dickson first would create stress areas that could rupture during hydroforming. App. Br. 9.

Appellant's argument that Moses cannot create a multi-wall thickness section is irrelevant because Dickson teaches this aspect of the claim. Dickson discloses providing a pre-formed hollow cylindrical member with a multi-wall thickness section (Facts 11-12).

Appellant's contention that hydroforming must be performed before "machining, drawing, or other operations" is also unconvincing. Contrary to what Appellant argues here, Appellant's Specification states swaging may be performed prior to hydroforming (Fact 2). Further, Moses discloses bending of the hollow member to attain the generally desired shape prior to hydroforming (Fact 10). While we considered Appellant's argument that hydroforming must be performed before "machining, drawing, or other operations," Appellant's arguments do not take the place of evidence. *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974). We conclude, by a preponderance of the evidence, that the hydroforming process of Moses can be performed on the preformed hollow cylindrical member provided by the process of Dickson.

CONCLUSION

Appellant has failed to show the Examiner erred in the rejection of claim 1 because Moses does disclose a hollow member with a polygonal cross-section section, and because the claimed process is not limited to use on materials with a thickness of greater than 1/8 inch.

Appellant has failed to show the Examiner erred in the rejection of claim 20 because it would have been obvious in view of the teaching of Moses to form a substantially rectangular cross-section section with a height to width ratio of 1.2.

Appellant has demonstrated error in the rejection of claim 4 because the Examiner failed to provide a sufficient reason to combine the teachings of Dickson and Moses.

Appellant has failed to show the Examiner erred in the rejection of claim 20 because Dickson discloses providing a pre-formed hollow member with multi-wall thickness.

DECISION

We affirm the Examiner's rejection of claims 1 and 20-23, and we reverse the rejection of claim 4.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED-IN-PART

vsh

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